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United States Patent [19]**Freed**[11] **Patent Number:** **5,480,644**[45] **Date of Patent:** **Jan. 2, 1996**

[54] **USE OF INJECTABLE BIOMATERIALS FOR THE REPAIR AND AUGMENTATION OF THE ANAL SPHINCTERS**

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[51] Int. Cl.⁶ **A61F 2/02; A61K 38/39; C07K 15/20**

[52] U.S. Cl. **424/436; 514/801; 514/882; 523/113; 523/121; 525/54.1; 530/356**

[58] **Field of Search** **424/423, 436, 424/465, 484; 514/801, 2, 12, 21, 882; 530/350, 353, 356, 399; 435/273; 525/54.1; 523/113, 115, 121; 524/415, 417**

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[57] **ABSTRACT**

This invention discloses methods of repairing structurally defective or inadequately functioning muscles of the anal sphincter and methods of improving the competency of incompetent anal sphincters by administering an effective amount of an injectable biomaterial into the defect or into the anal sinuses. Preferred biomaterials to be used in this invention are collagen formulations.

13 Claims, No Drawings